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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/724,712	12/02/2003	Ho Soung Kim	P24637	2220

7590 08/10/2006

ATTY  
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1950 Roland Clarke Place  
Reston, VA 20191

EXAMINER

AMRANY, ADI

ART UNIT	PAPER NUMBER
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2836

DATE MAILED: 08/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/724,712

Applicant(s)

KIM, HO SOUNG

Examiner

Adi Amrany

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☒ Claim(s) 1-6 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 3/9/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Priority***

1. Receipt is acknowledged of papers filed under 35 U.S.C. 119 (a)-(d) based on an application filed in Korea on December 14, 2002. Applicant has not complied with the requirements of 37 CFR 1.63(c), since the oath, declaration or application data sheet does not acknowledge the filing of any foreign application. A new oath, declaration or application data sheet is required in the body of which the present application should be identified by application number and filing date.

### ***Specification***

2. The disclosure is objected to because of the following informalities:
- a. Page 5, line 9; "displaying an" should be "displaying a."
- Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-6 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. The setting of the phase deficiency device is critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976).

The specification does not contain a description of how the latch lever (15) is set to its operating position of restricting the movable contactor (9). When the unit is first turned on, the bimetal is not hot. The bimetal, therefore, is straight, which causes the shifter (5) to be in the right-most position, and the latch lever (15) will pivot out of the path of the movable contactor (9) allowing the spring (11) to force the movable connector upwards (figure 4c). As the bimetal heats, bends, and pulls the shifter to the left (figure 4a), the latch lever (15) is pivoted back into the path of the movable connector (9). The movable connector, however, is still forced to its top-most by the spring. As shown in Figure 5B, the latch lever (15) is prevented from moving back into the back of the movable connector (9) by the presence of the movable connector.

The specification does not disclose a device or method to maintain the latch lever (15) in a blocking position when the normal current is first applied until the bimetal heats sufficiently to cause the interlock lever (12) and the connection bar (14) to keep the latch lever (15) in its blocking position.

5. Claim 1 is also rejected because the phrase "a latch lever installed *adjacent* to the interlock lever" is not enabling. The latch lever and interlock lever must be in mechanical communication in order for the bimetal to transfer movement through the shifter, connection bar, and interlock lever to cause the latch lever to move in/out of the path of the movable contactor. The limitation that the latch lever and interlock lever are *adjacent* does not include a limitation of physical contact between the two components.

Claims 2-6 are rejected because they depend on rejected claim 1.

***Allowable Subject Matter***

6. Claim 1 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

The prior art does teach a thermal magnetic type molded case circuit breaker provided with a bimetal, which is bendable when heat is applied thereto, and a shifter coupled to an upper end of the bimetal and horizontally movable corresponding to a bending degree of the bimetal when over-current is applied thereto (applicant's admitted prior art, figure 1; pages 3-5), the circuit breaker comprising a connection bar (figure 1, item 14). The prior art does teach an interlock lever and a latch lever, where the shifter transfer movement through the interlock lever to the latch lever.

The prior art does not teach or suggest a phase deficiency display device for a thermal magnetic type molded case circuit breaker provided with a bimetal, comprising a power source, a display, a stationary contactor, and a movable contactor vertically movable and forming a circuit together with the power source and the display. The prior art also does not teach or suggest a latch lever for restricting a movement of the movable contactor when normal current is applied and to release a restriction of the movable contactor when the phase deficiency occurs.

The prior art teaches molded case circuit breakers that separate stationary and movable contacts from electrical connection when a phase deficiency occurs. The prior art does not teach or disclose that a second, separate electrical connection is created when the circuit breaker is tripped due to a phase deficiency.

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7. Claims 2-6 are rejected to, as provided above, and are further objected to as being dependent upon a rejected base claim. The claims would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims or if the rejections to independent claim 1 are overcome.

With respect to claim 2, the prior art does not teach or suggest the movable contactor is elastically supported by an elastic means in such a manner that the movable contactor is *vertically biased in an upward direction*.

With respect to claim 3, the prior art does not teach or suggest a first protrusion provided at one end of the connection bar for inserting into the shifter and a second protrusion provided at the other end of the connection bar for inserting into the connection lever.

With respect to claim 4, the prior art does not teach or suggest the latch lever is rotated together with the interlock lever by engaging the interlock lever with the engaging pin.

With respect to claim 5, the prior art does teach the display includes one of a lamp, a liquid crystal display, or a light emitting device. See Carroll (US 5,353,014).

With respect to claim 6, the prior art does teach a buzzer generating an alarming sound, see Mitchetti (US 4,246,557), but does not teach or suggest the buzzer sounds when the movable contact contacts with the stationary contact due to a phase deficiency.

***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
- b. Rodriguez (US 6,600,396) discloses a molded case circuit breaker provided with a bimetal. Heating the bimetal translates into movement of a cross bar (shifter) which acts on an actuator lever to change the state of the switch.
  - c. Larranaga (US 6,466,424) discloses a molded case circuit breaker provided with a bimetal and temperature switches trigger the circuit breaker.
  - d. Leone (US 6,396,370) discloses a molded case circuit breaker provided with a bimetal and an elastic member. The elastic member is biased to rotate the breaker about an axis.
  - e. Grunert (US 5,193,043) discloses a molded case circuit breaker provided with a bimetal for detecting a phase deficiency.
  - f. Cheski (US 4,827,231) discloses a molded case circuit breaker provided with a bimetal and a view window for displaying when the breaker is tripped. The display is not connected to a power source.
  - g. Nerstrom (US 6,542,056) discloses a circuit breaker provided with a bimetal with a light display triggered on the occurrence of an arc fault.
  - h. Carroll (US 5,353,014) discloses a molded case circuit breaker provided with a bimetal (26), shifter (36), stationary contactors (30, 38), movable contactor (22), a power supply (16), display (42,52,62), and an elastic member (24). Carroll further discloses an interlock lever (14) and a connection bar (fin of 26).

Carroll does not disclose a latch lever for restricting the movable contactor. The Carroll movable contactor is always in electrical contact with at least one of the stationary contactors to display the status of the circuit breaker.

i. Tsuchiyama (US 5,079,530) discloses a circuit breaker provided with a bimetal and an illuminating display, but does not disclose the mechanical connections of the present application

j. Radus (US 4,554,524) discloses a circuit breaker provided with a bimetal and a light indicator display. Radus does not disclose the mechanical connections of the present application, namely the latch lever for restricting a movement of the movable connector.

k. Michetti (US 4,246,557) discloses a circuit breaker provided with a bimetal and an audible buzzer alarm.

l. Scott (US 4,696,063) discloses a circuit breaker with status indicator lights, but does not disclose a bimetal element or a latch lever for restricting the movement of a movable contactor.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Adi Amrany whose telephone number is (571) 272-0415. The examiner can normally be reached on weekdays, from 9am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on (571) 272-2800 x36. The fax phone



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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AA



BURTON S. MULLINS  
PRIMARY EXAMINER